

REMARKS/ARGUMENTS

The office action of June 16, 2003 has been carefully reviewed and these remarks are responsive thereto. Pursuant to the election made under 37 C.F.R. § 1.111, which was filed on October 29, 1999, Applicants hereby cancel claims 54-67 and 71-84. By the present amendment, Applicant has amended the claims, and new claims 85-97 have been added. Reconsideration and allowance of the application are respectfully requested.

Information Disclosure Statements

Page 1 of the IDS submitted on May 6, 2002 has not been returned by the Examiner. Furthermore, Patent No. 5,796,942 and WO 00/70458 on page 2 of the IDS submitted on May 6, 2002 have not been initialed. In addition, the IDSs submitted on November 4, 2002, September 20, 2002, August 19, 2002, and September 25, 2000 have not been returned by the Examiner. Applicants respectfully request that the Examiner examine and acknowledge the references cited within the previously submitted IDSs.

Amendment to the Specification

A minor amendment to the specification has been made on page 50 to correct a typographical error relating to a reference symbol used in the drawings. No new matter has been added.

Rejections Under 35 U.S.C. § 102

Claims 1, 4, 5, 7-12, 19, 23, 26, 27, 29-34, 41, 45, 46 and 49 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Blumenau (U.S. Pat. No. 6,263,445). Applicants respectfully traverse this rejection for the following reasons.

The office action relies on Blumenau as showing "discriminator values" embedded in data packets transmitted between two computers. The office action cites Blumenau, col. 12, lines 51-65 and col. 13, lns. 20-57, as describing the features of the invention as claimed in original claim 1 (see also Blumenau FIG. 8b and 8c, and FIG. 9).

Blumenau describes a storage system that authenticates each I/O request from the host processor through the use of a random number. See col. 12, lns. 59-63, col. 13, lns. 11-16, 20-25,

and 27-32. The system of Blumenau shows a one-way transmission of packets from an HBA to the storage system 320 containing random numbers that were previously provided to the HBA from the storage system 320. The random numbers are inserted into a source session ID field of a packet payload (FIG. 2, note payload portion 160). A header of the packet 55 contains source and destination IDs 52 and 53 as is well known in the art.

As amended, independent claim 1 recites that a network address is embedded in a header of each data packet transmitted between two computers, wherein the network address periodically changes between successive packets, and wherein the network address is used to route packets over the network. Moreover, as amended independent claim 1 recites that the receiving computer compares the network address in each packet header to a moving window of valid network addresses and detecting a match within the window. In contrast, Blumenau inserts random numbers in a payload portion of a packet (i.e., not the header, see FIG. 2). Moreover, the random numbers in Blumenau are not used to route the data packets on the network. Nor does Blumenau compare the incoming network addresses to a moving window of valid network addresses as claimed in amended claim 1. Instead, the random numbers of Blumenau are compared to a static block (FIG. 9) that does not have a moving window as claimed.

Consequently, the subject matter of independent claim 1 (and the claims that depend from claim 1) is distinguishable from Blumenau. Independent apparatus claim 23 has been amended in a similar manner and is distinguishable for similar reasons. Independent apparatus claim 45 has also been amended in a similar manner and is distinguishable for similar reasons.

Dependent claims 4 and 26 further recite a step of embedding an additional quasi-random value in a data field external to an IP header of each data packet. This feature is not shown or suggested in Blumenau.

Dependent claims 8 and 30 further recite a feature that the window is moved as each successive data packet is received. This feature is not shown or suggested in Blumenau.

Dependent claims 10 and 32 further recite a step of transmitting an algorithm for selecting successively valid discriminator values. Blumenau neither shows nor suggests such a feature. Instead, Blumenau actually transmits a complete list of random numbers that are to be used by the host computer, so no such algorithm is needed. *See col. 13, lns. 4-10.*

Dependent claims 11 and 33 recite the use of a presence vector to determine whether to accept each packet. This feature is not shown or suggested in Blumenau. Blumenau's source/destination IDs in col. 5, lns. 55-64 are used only for identification of the host processors and storage system and would be improper if used as a presence vector, where a presence vector is a bit vector of length 2^n that can be indexed by n -bit numbers and can indicate the presence of k n -bit numbers by setting the bits in the presence vector indexed by each number to 1. *See* specification, pp. 47-48. Accordingly, these claims are allowable over Blumenau.

Dependent claims 12 and 34 recite, "using a hashing function to determine whether the network address is valid." The hashing function in Blumenau is used to form a checksum that verifies the integrity of the data that is transferred. *See* col. 14, lns. 52-65. It does not, however, determine whether the network address is valid as claimed.

Dependent claims 19 and 41 recite a feature of storing a transmit and receive table in each of a first and second computer (i.e., two tables in each computer). Blumenau does not show or suggest such a feature. Indeed, Blumenau does not show two-way transmission of packets using embedded values as claimed.

Dependent claim 46 recites a feature that the window is moved in response to detecting a match. This feature is not shown or suggested in Blumenau.

Independent claims 20 and 42 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Rochberger et al. (U.S. Pat. No. 6,061,736, hereinafter Rochberger). Applicants respectfully traverse this rejection for the following reasons.

As amended, independent claims 20 and 42 recite selecting a next pair of source and destination network addresses generated from an algorithm that generates a plurality of pairs of source and destination addresses, each pair associated with the one randomly selected physical transmission path. In other words, each physical transmission path may have multiple source/destination pairs that constitute a valid addressing scheme, and the algorithm selects from among these pairs. The packets are transmitted on each selected random path using the selected next pair for that path. This feature is neither shown nor suggested by Blumenau.

Claims 50-53 and 68-70 stand rejected under 35 U.S.C. § 102(e) as be anticipated by Shannon (U.S. Pat. No. 6,233,618, hereinafter Shannon). Applicants respectfully traverse this rejection for at least the following reasons.

Independent claim 50 has been amended to recite that the receiving computer maintains a sliding window of valid discriminator values, wherein the window slides to encompass a next range of valid discriminator values in response to detecting matches. No such feature is shown or suggested in Shannon. The "movement" in Shannon to a different table (mentioned on page 5 of the office action) does not fairly meet this recited feature.

Independent claim 68 has been amended to recite that the transmitting computer, for each data packet, inserts into a header of the data packet a network address (used to route data packets over the network) using an algorithm that selects the network address quasi-randomly from a plurality of network addresses that are each mapped to the receiving computer. This feature is not shown or suggested by the prior art. Consequently, claim 68 and the claims that depend from it are allowable.

Rejections Under 35 U.S.C. § 103

In order to reject a claim as obvious under § 103(a), three criteria must exist: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference(s) must teach or suggest all the claim limitations. *See MPEP § 706.02 (j); In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Dependent claims 2, 3, 6, 17, 18, 24, 25, 28, 39, 40, 47, and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Blumenau in view of Shannon. Most if not all of these rejections are rendered moot in light of the amendments to the claims as explained above and in light of the arguments set forth above.

Moreover, there would be no motivation to combine Blumenau with Shannon. Blumenau, as set forth above, discloses the use of random numbers to verify the one-way transmission of I/O requests from an HBA to a storage system. The Office Action suggests that it would have been obvious to modify Blumenau in light of Shannon, which discloses the use of IP addresses to route packets over a network. Applicants respectfully point out that (a) nothing in Shannon suggests using a moving window of valid network addresses to validate incoming packets as now claimed; and (b) there would be no expectation of success, since Shannon discloses using the same IP address to communicate between two given nodes. In other words, if

Blumenau were modified to periodically change addresses that were used to communicate between the HBA and storage system, there would be no reasonable expectation that such a system would work, because it is not clear how the different nodes would know about the changing network addresses and would not be able to determine that multiple addresses were mapped to the same physical node. The random numbers in Blumenau, which are in the payload of the packets, can be changed without affecting the network routing of the packets. Relying on changing addresses as in the claimed invention would result in Blumenau becoming inoperative. (Shannon also presumes that each client will use a predetermined Internet Protocol address that does not change as illustrated by the group/source database 203, which is “locally configured during the setup of each network device.” See col. 12, lns. 2-5.). Consequently, none of the rejections based on the combination of Blumenau and Shannon is proper.

Dependent claims 13-16 and 35-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Blumenau in view of Boebert et al. (U.S. Pat. No. 5,276,735, hereinafter Boebert). As a preliminary matter, dependent claims 13-16, which ultimately depend from claim 1, are allowable for at least the same reasons discussed above in regard to claim 1. In addition, dependent claims 35-38, which ultimately depend from claim 23, are allowable for at least the same reasons discussed above in regard to claim 23. Other aspects of these rejections are rendered moot in view of the claim amendments and arguments above, and further as explained below.

Dependent claims 13 and 35 recite, “transmitting a synchronization request between the first computer and the second computer, wherein the second computer uses the synchronization request to maintain synchronization of valid network addresses.” Applicants respectfully submit that there is no motivation to modify Blumenau, in which a storage system authenticates an I/O session with a host processor through a random number, in view of Boebert, in which a synchronization protocol is used, to use a synchronization request to maintain synchronization of valid network addresses. In Blumenau, there is no need for a synchronization request between the storage system and the host processor because only the storage system creates the random numbers and sends the random numbers to the host processors to use. *See* col. 13, lns. 12-44. Thus, there is no motivation to modify Blumenau in view of Boebert because Blumenau teaches away from using a synchronization request. Thus, claims 13 and 35 are allowable over Blumenau in view of Boebert.

Dependent claims 21, 22, 43, and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rochberger in view of Mayes et al. (U.S. Pat. No. 6,510,154). These rejections are rendered moot in view of the claim amendments and arguments above as to the independent claims from which they depend. (Dependent claims 21 and 43 have been canceled).

New Claims

New claims 85-97 have been added.

New independent claim 85 recites a method of communicating between two nodes, including steps of using an algorithm to select from among a plurality of different network addresses and using the selected network address in a packet header that is transmitted to a second node; and a reverse step of using a second algorithm to select a network address from a second plurality of different network addresses in a packet header that is transmitted to the first node. None of the prior art, whether alone or in combination, discloses this two-way communication feature.

New independent claim 92 recites a method of communicating between two nodes, including a step of storing a transmit netblock comprising a plurality of pairs of source and destination IP addresses, and an algorithm that is used to select one of the plurality of pairs for packets that are transmitted to the second node. None of the prior art, whether alone or in combination, discloses this feature.

Dependent claims 86-91 and 93-97 are believed to be allowable for these and other reasons.

CONCLUSION

If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

All rejections having been addressed, applicants respectfully submit that the application is in condition for allowance, and respectfully solicits prompt notification of the same. However, if for any reason the Examiner believes the application is not in condition for allowance or there are any questions, the examiner is requested to contact the undersigned at (202) 824-3160.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated this 14 day of Nov., 2003

By:



Bradley C. Wright
Registration No. 38,061

1001 G Street, N.W.
Washington, D.C. 20001-4597
Tel: (202) 824-3000
Fax: (202) 824-3001